# ÖVE/ÖNORM
# EN 300 395-2 V1.3.3

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## TETRA and Critical Communications Evolution (TCCE); Speech codec for full-rate traffic channel;
## Part 2: TETRA codec
(ETSI EN 300 395-2 V1.3.3 (2025-02))



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## Nationales Vorwort

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# ETSI EN 300 395-2 V1.3.3 (2025-02)


## TETRA and Critical Communications Evolution (TCCE); Speech codec for full-rate traffic channel; Part 2: TETRA codec

Reference
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# Foreword

This European Standard (EN) has been produced by ETSI Technical Committee TETRA and Critical Communications Evolution (TCCE).

The present document is part 2 of a multi-part deliverable covering speech codec for full-rate traffic channel, as identified below:

Part 1: "General description of speech functions";

**Part 2: "TETRA codec";**

Part 3: "Specific operating features";

Part 4: "Codec conformance testing".

Clause 4 provides a complete description of the full rate speech source encoder and decoder, whilst clause 5 describes the speech channel encoder and clause 6 the speech channel decoder.

Clause 7 describes the codec performance.

Clause 8 introduces the bit exact description of the codec. This description is given as an ANSI C code, fixed point, bit exact. The whole C code corresponding to the TETRA codec is given in computer files attached to the present document, and are an integral part of this multi-part deliverable.

Clause 9 describes the optional AMR codec.

Clause 10 describes the AMR speech channel encoder.

Clause 11 describes the AMR speech channel decoder.

Clause 12 introduces the AMR speech channel encoder and decoder. This description is given as an ANSI C code.

In addition to these clauses, five informative annexes are provided.

Annex A describes a possible implementation of the speech channel decoding function.

Annex B provides comprehensive indexes of all the routines and files included in the C code associated with the present document.

Annex C describes the actual quality, performance and complexity aspects of the codec.

Annex D reports detailed results from codec characterization listening and complexity tests.

Annex E contains instructions for the use of the attached electronic files.

Annex F lists informative references relevant to the speech codec.

| National transposition dates | |
|---|---|
| Date of adoption of this EN: | 7 January 2025 |
| Date of latest announcement of this EN (doa): | 30 April 2025 |
| Date of latest publication of new National Standard or endorsement of this EN (dop/e): | 31 October 2025 |
| Date of withdrawal of any conflicting National Standard (dow): | 31 October 2025 |

# Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

"**must**" and "**must not**" are **NOT** allowed in ETSI deliverables except when used in direct citation.

# 1 Scope

The present document contains the full specification of the speech codecs for use in the Terrestrial Trunked Radio (TETRA) system.

The TETRA codec specified in clauses 4 to 8 is mandatory for all TETRA mobiles and networks. The AMR codec specified in clauses 9 to 12 is optional. If the AMR codec is implemented, all clauses from 9 to 12 applies.

# 2 References

## 2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found in the ETSI docbox.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] ETSI EN 300 392-2: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Part 2: Air Interface (AI)".

[2] ETSI TS 126 073: "Universal Mobile Telecommunications System (UMTS); ANSI-C code for the Adaptive Multi Rate speech codec (3GPP TS 26.073 Release 4)".

[3] ETSI TS 126 074: "Universal Mobile Telecommunications System (UMTS); Mandatory speech codec speech processing functions; AMR speech codec test sequences (3GPP TS 26.074 Release 4)".

[4] ETSI TS 126 090: "Universal Mobile Telecommunications System (UMTS); Mandatory Speech Codec speech processing functions AMR Speech Codec - Transcoding functions (3GPP TS 26.090 Release 4)".

## 2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] Recommendation ITU-T P.48 (1988): "Specification for an intermediate reference system".

[i.2] ETSI ETR 300-1: "Terrestrial Trunked Radio (TETRA); Voice plus Data (V+D); Designers' guide; Part 1: Overview, technical description and radio aspects".